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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,695	06/26/2003	Michael E. Dobbs	0029-0007	2896

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EXAMINER	
LEE, PATRICK J	

ART UNIT	PAPER NUMBER
2878	

DATE MAILED: 07/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H·D

Office Action Summary	Application No.	Applicant(s)	
	10/603,695	DOBBS ET AL.	
	Examiner	Art Unit	
	Patrick J. Lee	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *0603, 0703, 1104*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

2. Claims 1-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 1, 7, 12, 19, & 21, the phrase "interaction with the sample" is indefinite as to what type of interaction takes place. As a result, independent claims 1, 7, 12, 19, & 21 and dependent claims 2-6, 8-11, 13-18, 20, & 22 are rejected.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,594,003 B1 to Horiuchi et al in view of US 6,064,488 to Brand et al.

With respect to claim 1, Horiuchi et al disclose a device comprising: wavelength variable light source (24) as a first source configured to emit radiation over a range of wavelengths; reference light source (22) as a second source configured to emit radiation at a fixed wavelength; optical intensity modulator (34) as a first modulator configured to modulate the radiation at a first frequency (fs); optical intensity modulator (28) as a second modulator configured to modulate radiation at a second frequency (fr); and photodetector (40) as a first detector configured to detect radiation that interacts with line (12). While Horiuchi et al does not explicitly disclose the use of a first lock-in amplifier and a second lock-in amplifier, such is disclosed by Brand et al in their device that incorporates first lock-in amplifier (65) and second lock-in amplifier (66). Such a modification would have been obvious to one of ordinary skill in the art because the amplifiers allow for an improved ability of the processing circuit (14) to process signals from the line (12) and to separate out harmonic components (see Brand et al column 5, lines 2-5).

With respect to claim 2, the use of a distributed feedback laser is not explicitly disclosed, but such would have been obvious to one of ordinary skill in the art as such lasers are low in cost to integrate into the system.

With respect to claim 3, the modified Horiuchi et al discloses multiplexer (36) as a coupler connected to the modulators to combine a signal, but does not explicitly disclose the use of an optical amplifier. However, such a modification would have been obvious to one of ordinary skill in the art because it would have allowed for improved ability of the device to make sufficient radiation incident on the sample.

With respect to claim 4, the modified Horiuchi et al disclose a reference detector (14) as a second detector configured to detect the modulated radiation before the interaction with a sample as well as third lock-in amplifier (67) and fourth lock-in amplifier (68).

With respect to claim 5, the modified Horiuchi et al disclose arithmetic circuit (48) and microprocessor (63) to process the signals in order to attain information about the feature.

With respect to claim 6, the modified Horiuchi et al disclose the use of the device in a concentration measurement application (see Brand et al column 2, lines 20-23).

With respect to claim 7, Horiuchi et al disclose a device comprising: wavelength variable light source (24) and reference light source (22) as a means for transmitting radiation including a varying component at a first frequency and a fixed component at a second frequency; photodetector (40) as a first detector configured to detect radiation that interacts with line (12); and microprocessor (14). While Horiuchi et al does not explicitly disclose the use first and second means to determine portion of the remote detection signal, such is disclosed by Brand et al in their device that incorporates sample detector (17) and null detector (18). Such a modification would have been

obvious to one of ordinary skill in the art because the detectors allow for accurate wavelength control for an accurate measurement of concentration (see Brand et al column 2, lines 20-23).

With respect to claim 8, the modified Horiuchi et al disclose: oscillator (30) to generate a tuning signal that periodically sweeps over a range of wavelengths; light source (22) to generate a reference signal having a reference wavelength; optical intensity modulator (34) to modulate the tuning signal at a first frequency to produce the varying component; optical intensity modulator (28) to modulate the reference signal at a second frequency to produce the fixed component; and multiplexer (36) to combine the varying and fixed component.

With respect to claim 9, the modified Horiuchi et al does not explicitly disclose the use of an optical amplifier. However, such a modification would have been obvious to one of ordinary skill in the art because it would have allowed for improved ability of the device to make sufficient radiation incident on the sample.

With respect to claim 10, the modified Horiuchi et al disclose a reference detector (14) as a detector configured to detect the modulated radiation before the interaction with a sample as well as third lock-in amplifier (67) and fourth lock-in amplifier (68) to determine portions of the local detection signals present at first and second frequencies.

With respect to claim 11, the modified Horiuchi et al disclose arithmetic circuit (48) and microprocessor (63) to process the signals in order to attain information about the feature.

With respect to claim 12, Horiuchi et al disclose a device comprising: wavelength variable light source (24) as a tunable source configured to emit radiation over a range of wavelengths; reference light source (22) as a reference source configured to emit radiation at a fixed wavelength; optical intensity modulator (34) as a first modulator configured to modulate the radiation at a first frequency (fs); optical intensity modulator (28) as a second modulator configured to modulate radiation at a second frequency (fr); photodetector (40) as a science detector configured to detect radiation that interacts with line (12); and arithmetic circuit (48) as a processor. While Horiuchi et al does not explicitly disclose the use of a first lock-in amplifier and a second lock-in amplifier, such is disclosed by Brand et al in their device that incorporates first lock-in amplifier (65) and second lock-in amplifier (66). Such a modification would have been obvious to one of ordinary skill in the art because the amplifiers allow for an improved ability of the processing circuit (14) to process signals from the line (12) and to separate out harmonic components (see Brand et al column 5, lines 2-5).

With respect to claim 13, the modified Horiuchi et al disclose multiplexer (36) as a coupler connected to the modulators to combine a signal.

With respect to claim 14, the modified Horiuchi et al does not explicitly disclose the use of an optical amplifier. However, such a modification would have been obvious to one of ordinary skill in the art because it would have allowed for improved ability of the device to make sufficient radiation incident on the sample.

With respect to claim 15, the modified Horiuchi et al disclose a reference detector (14) as a detector configured to detect the modulated radiation before the interaction

with a sample as well as third lock-in amplifier (67) and fourth lock-in amplifier (68) to determine portions of the local detection signals present at first and second frequencies.

With respect to claim 16, the modified Horiuchi et al disclose arithmetic circuit (48) and microprocessor (63) to process the signals in order to attain information about the feature from the reference signal.

With respect to claim 17, the modified Horiuchi et al does not explicitly disclose the specifics of the sweep frequency, but such would have been obvious to one of ordinary skill in the art in order to ensure for accurate detection of the characteristics of the sample.

With respect to claim 18, the modified Horiuchi et al disclose the reference wavelength (λr) and measuring wavelength (λs) being close but not interfering with each other (see Horiuchi et al column 3, lines 64-67 and column 4, lines 1-3).

With respect to claim 19, Horiuchi et al disclose a device comprising: wavelength variable light source (24) as a tunable source configured to emit radiation over a range of wavelengths; reference light source (22) as a reference source configured to emit radiation at a fixed wavelength; optical intensity modulator (34) as a first modulator configured to modulate the radiation at a first frequency (fs); optical intensity modulator (28) as a second modulator configured to modulate radiation at a second frequency (fr); photodetector (40) as a science detector configured to detect radiation that interacts with line (12); and arithmetic circuit (48) as a processor. While Horiuchi et al does not explicitly disclose the use of a first lock-in amplifier and a second lock-in amplifier, such is disclosed by Brand et al in their device that incorporates first lock-in amplifier (65) and

second lock-in amplifier (66). Such a modification would have been obvious to one of ordinary skill in the art because the amplifiers allow for an improved ability of the processing circuit (14) to process signals from the line (12) and to separate out harmonic components (see Brand et al column 5, lines 2-5). While Horiuchi et al does not explicitly disclose the use first and second means to determine portion of the remote detection signal, such is disclosed by Brand et al in their device that incorporates sample detector (17) and null detector (18). Such a modification would have been obvious to one of ordinary skill in the art because the detectors allow for accurate wavelength control for an accurate measurement of concentration (see Brand et al column 2, lines 20-23).

With respect to claim 20, the modified Horiuchi et al does not explicitly disclose such a multiplication step, but such would have been obvious to one of ordinary skill in the art because this would have allowed for cancellation of any interference in the signal received.

With respect to claim 21, Horiuchi et al disclose a device comprising: wavelength variable light source (24) and reference light source (22) as means for generating wavelength-varying radiation and fixed-wavelength radiation; optical intensity modulator (34) as a means for modulating wavelength-varying radiation at a first frequency (fs); optical intensity modulator (28) as a means for modulating fixed-wavelength radiation at a second frequency (fr); and photodetector (40) as a means for detecting radiation. While Horiuchi et al does not explicitly disclose the use first and second means to determine portion of the remote detection signal, such is disclosed by Brand et al in

their device that incorporates sample detector (17) and null detector (18). Such a modification would have been obvious to one of ordinary skill in the art because the detectors allow for accurate wavelength control for an accurate measurement of concentration (see Brand et al column 2, lines 20-23).

With respect to claim 22, Horiuchi et al disclose a reference detector (14) as a detector configured to detect the modulated radiation before the interaction with a sample as well as third lock-in amplifier (67) and fourth lock-in amplifier (68) to determine portions of the local detection signals present at first and second frequencies.

Double Patenting

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

7. Claims 1-22 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of copending Application No. 10/419,797 in view of US 6,594,003 B1 to Horiuchi et al. Application No. 10/419,797 claim the exact same device with the exception that it does not include modulators for the sources. However, Horiuchi et al disclose such through

optical intensity modulators (28, 34). To modify such teachings would have been obvious because it would have granted additional control over the light sources.

This is a provisional obviousness-type double patenting rejection.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Lee whose telephone number is (571) 272-2440. The examiner can normally be reached on Monday through Friday, 8:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David P. Porta can be reached on (571) 272-2444. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patrick J. Lee
Examiner
Art Unit 2878

PJL
July 20th, 2005

Stephone B. Allen
Primary Examiner